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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/783,497	02/20/2004	Peter J. Hayward	647P007	2135

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EXAMINER

GREENE, JASON M

ART UNIT PAPER NUMBER

1724

DATE MAILED: 03/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/783,497

Applicant(s)

HAYWARD ET AL.

Examiner

Jason M. Greene

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3/25/04; 6/7/04</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claims

1. With regard to claim 13, the Examiner notes that the term "containing" in line 3 has been interpreted as being open ended.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-10 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Grangeon et al. (US 5,824,220).

With regard to claims 1-5 and 7-10, Grangeon et al. discloses a porous ceramic support for a gas separation membrane formed by sintering a green body containing

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refractory grains of at least one simple or compound ceramic oxide and grains of at least one reactive binder precursor, wherein the refractory grains comprise alumina or titania and have a CTE greater than about $8 \times 10^{-6}/^{\circ}\text{C}$, the grains of the reactive binder precursor comprising titania and zirconium (either the oxide (Example 3) or thermally decomposable nitrate (Example 4)) and being reacted with atmospheric oxygen to form a reaction bond to bind the refractory grains, the mean pore size being 2.5-8.5 μm (Tables 4 and 5), wherein the support configuration is a plate structure (col. 6, lines 43-44), and wherein the size of the refractory grains are at least 20 μm (col. 3, line 1) in col. 2, line 35 to col. 7, line 7.

With regard to claims 6 and 12, since the porous ceramic support of Grangeon et al. is identical to the instantly claimed porous support, the porous support of Grangeon et al. will inherently exhibit of less than about 5%.

4. Claim 13 is rejected under 35 U.S.C. 102(b) as being anticipated by Grangeon et al. (US 5,824,220).

Grangeon et al. discloses a method of forming a porous ceramic support comprising making a mixture containing refractory grains of at least one simple or compound ceramic oxide (alumina or titania) and grains of at least one reactive binder precursor (titania and zirconium (either the oxide (Example 3) or thermally decomposable nitrate (Example 4))), wherein the refractory grains have a CTE greater than about $8 \times 10^{-6}/^{\circ}\text{C}$, forming the mixture into a green body, sintering the green body

to react the grains of the reactive precursor with atmospheric oxygen to form a reaction bond to bind the refractory grains, and cooling the sintered body in col. 2, line 35 to col. 7, line 7.

5. Claims 1-8, 11 and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Bishop et al. (US 6,695,967 B2)

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

With regard to claims 1-5, 7 and 8 and 8, Bishop et al. discloses a porous ceramic support usable with a gas separation membrane formed by sintering a green body containing refractory grains (alumina) and grains of at least one reactive binder precursor (aluminum metal powder), wherein the refractory grains have a CTE greater than about $8 \times 10^{-6}/^{\circ}\text{C}$, and being reacted with atmospheric oxygen to form a reaction bond to bind the refractory grains, the mean pore size being greater than 1 μm , wherein the support configuration is a multi-channel monolith, and wherein the size of the refractory grains are 5-200 μm in col. 12, lines 31-67.

With regard to claims 6 and 12, Bishop et al. discloses the volume change during sintering being less than about 5% in col. 5, lines 29-31.

With regard to claim 11, Bishop et al. discloses the grain size of the reactive binder precursor (aluminum metal powder) being 1-3 μm in col. 8, lines 53-54.

6. Claim 13 is rejected under 35 U.S.C. 102(b) as being anticipated by Bishop et al. (US 6,695,967 B2).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Bishop et al. discloses a method of forming a porous ceramic support comprising making a mixture containing refractory grains of at least one simple or compound ceramic oxide (alumina) and grains of at least one reactive binder precursor (aluminum metal powder), wherein the refractory grains have a CTE greater than about $8 \times 10^{-6}/^{\circ}\text{C}$, forming the mixture into a green body, sintering the green body to react the grains of the reactive precursor with atmospheric oxygen to form a reaction bond to bind the refractory grains, and cooling the sintered body in col. 12, lines 31-67.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grangeon et al. (US 5,824,220).

Grangeon et al. discloses the zirconium oxide reactive binder precursor having a grain size less than 325 mesh (45 μm) in col. 5, lines 49-50. Since the prior art range of less than 45 μm is seen as overlapping the claimed range of less than about 10 μm , a prima facie case of obviousness exists which must be overcome through a showing of unexpected or unobvious results.

Double Patenting

9. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140

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F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

10. Claims 1-5, 7, 8 and 13 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-8 and 17 of U.S. Patent No. 6,695,967 B2. Although the conflicting claims are not identical, they are not patentably distinct from each other.

With regard to claims 1-5, 7 and 8 and 8, claims 1-8 of the '967 patent disclose a porous ceramic support usable with a gas separation membrane formed by sintering a green body containing refractory grains (alumina) and grains of at least one reactive binder precursor (aluminum metal powder), wherein the refractory grains have a CTE greater than about $8 \times 10^{-6}/^{\circ}\text{C}$, and being reacted with atmospheric oxygen to form a reaction bond to bind the refractory grains, the mean pore size being greater than 1 μm , wherein the support configuration is a multi-channel monolith, and wherein the size of the refractory grains are 5-200 μm in col. 12, lines 31-67.

While the claims of the '967 patent recite features in addition to those of the instant claims (e.g. the surface area of the passageways), the claims of the '967 patent still anticipate the instant claims. Anticipation is the epitome of obviousness.

With regard to claims 13, claim 17 of the '967 patent discloses a method of forming a porous ceramic support comprising making a mixture containing refractory grains of at least one simple or compound ceramic oxide (alumina) and grains of at least one reactive binder precursor (aluminum metal powder), wherein the refractory grains have a CTE greater than about $8 \times 10^{-6}/^{\circ}\text{C}$, forming the mixture into a green body, sintering the green body to react the grains of the reactive precursor with atmospheric oxygen to form a reaction bond to bind the refractory grains, and cooling the sintered body in col. 12, lines 31-67.

While the claims of the '967 patent recite features in addition to those of the instant claims (e.g. the surface area of the passageways), the claims of the '967 patent still anticipate the instant claims. Anticipation is the epitome of obviousness.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The Hayward et al., Videtto, Bandyopadhyay et al, and JP 4-198058 references disclose similar porous ceramic supports.


Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason M. Greene whose telephone number is (571) 272-1157. The examiner can normally be reached on Monday - Friday (9:00 AM to 5:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on (571) 272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jason M. Greene
Primary Examiner
Art Unit 1724



3/20/06

jmg
March 20, 2006